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# HortFlora

## Research Spectrum

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**ABSTRACTS**

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# HortFlora

## Research Spectrum

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**1. Effect of LEDs on flower bud induction in *Chrysanthemum morifolium* cv. Zembla**

**Mam C. Singh<sup>1</sup>\*, Wim van Ieperen and E.P. Heuvelink**

*Horticultural Production Chains Group, Plant Sciences, Droevendaalsesteeg-1, 6708 PB Wageningen, Wageningen University, The Netherlands*

<sup>1</sup>*Present address: Centre for Protected Cultivation Technology, I.A.R.I. Pusa Campus, New Delhi-110012, India*

\*E-mail: [mamsingh@gmail.com](mailto:mamsingh@gmail.com)

**ABSTRACT:** The effect of LEDs was studied to induce flower under artificial long days (LD) in *Chrysanthemum morifolium* cv. Zembla plants, using light emitting diodes (LED) @ PAR  $\text{m}^2 \text{s}^{-1}$  80% Red / 20% Blue maintained @  $100 \mu \text{mol m}^{-2} \text{s}^{-1}$  using royal blue light @ 455 nm and red light @ 640 nm wavelengths and compared with short day (SD) length. Difference in growth and flowering response were also investigated. Stem length is determined as a function of internode length which could be the function of attaining minimum number of leaves required for expressing the diurnal response using LEDs. *Chrysanthemum* plants exhibited a strong diurnal response attained in leaves and transmitted to the apex and took minimum (28 days) and maximum time (61 days) with an exposure to LEDs with (15h) and without (11h) additional blue spectrum, respectively. However, bud induction was possible earliest due to low red/far ratio in the extended exposure of plants with blue LEDs.

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**2. Effect of different levels of nitrogen, phosphorus and potash on growth and flowering of *Chrysanthemum* cultivars**

**N.S. Joshi, A.V. Barad\*, D.M. Pathak and Nilima Bhosale**

*Junagadh Agricultural University, Junagadh (Gujarat)-362 001*

\*E-mail : [avbarad55@gmail.com](mailto:avbarad55@gmail.com)

**ABSTRACT:** Field experiments were conducted for two consecutive years on medium black calcareous soil of Horticultural Instructional Farm, Junagadh Agricultural University, Junagadh. The experiment was laid out in factorial randomized block design with twenty four treatments replicated three times. The treatments consisted of two varieties of chrysanthemum viz., IIHR-6 ( $V_1$ ) and Shyamal ( $V_2$ ), three levels of nitrogen (100, 200 and 300 N kg ha<sup>-1</sup>), two levels of phosphorus (100 and 150 P<sub>2</sub>O<sub>5</sub> kg ha<sup>-1</sup>) and two levels of potash (100 and 150 K<sub>2</sub>O kg ha<sup>-1</sup>). Both the varieties significantly influenced growth and flowering parameters, where, plant height, number of branches per plant and leaf area were observed higher in the variety IIHR-6 during both the years and in pooled results; whereas higher fresh and dry weight of plant, weight of 10 flowers, flowering span and dry weight of flowers were recorded in the variety Shyamal. The later variety also took more days for first flower bud initiation and first flower open. Application of nitrogen at 300 kg ha<sup>-1</sup> recorded significantly highest plant height, number of branches per plant, leaf area, fresh and dry weight of plant, flowering span, total fresh and dry weight of flower, weight of 10 flowers and diameter of flower during the first year, second year and in pooled data. The dose @ 300 N kg ha<sup>-1</sup> also took less days for first flower bud initiation and first flower open. Phosphorus also played a significant role in improving all of these attributes at higher level except, leaf area, fresh weight of plant, number of days taken for first flower open and flowering span. Effect of potash was failed to influence all of these growth and flowering parameters during both the years and in pooled results also.

**Published in : *HortFlora Research Spectrum*, Vol. 2(3) : 189-196 (2013)**

**3. Fluctuation of fruit fly oriented damage in mango in relation to major abiotic factors**

**K.B. Patel\*, S.P. Saxena and K.M. Patel**

*Department of Agricultural Entomology, N.M. College of Agriculture,*

*Navsari Agriculture University, Navsari (Gujarat) 396 450*

\*E-mail: [patel\\_ketan2009@yahoo.co.in](mailto:patel_ketan2009@yahoo.co.in)

**ABSTRACT:** A field experiment was carried out at Navsari Agricultural University, Navsari during 2009-11. Population of fruit fly was observed during 13 (26 March –1 April) - 30 (23-29 July) Standard Week (SW) in 2009-10, 2010-11 and pooled, respectively. Highest fruit fly infestation (36.67 %) was observed on 22<sup>nd</sup> SW coinciding with ripening cum harvesting period of mango which increased with increase in temperature, relative humidity, wind velocity and evaporation.

**Published in : *HortFlora Research Spectrum*, Vol. 2(3) : 197-201 (2013)**

**4. Study on the biochemical, sensory and microbial contamination of custard apple RTS beverage**

**Virendra Singh, Rita Markam\*, Pramod Uikey and Vinayak Shinde**

*Department of Horticulture, College of Agriculture, Junagadh Agricultural University, Junagadh*

*\*E-mail : ritamarkamjau10@gmail.com*

**ABSTRACT:** The effect of juice extraction method and recipe and in combination was studied on the microbial, sensory and chemical attributes of the custard apple RTS beverage stored at ambient condition for 180 days with an interval of 30 day. Mean score of taste panel for colour, taste and overall acceptability significantly ( $p < 0.05$ ) decreased, while, chemical panel in term of acidity, TSS, reducing sugar and total sugar significantly increased. In case of microbial contamination found in RTS beverage, bacterial and fungal growth had occurred at 30 days then it was decreased.

**Published in : *HortFlora Research Spectrum*, Vol. 2(3) : 202-207 (2013)**

**5. Studies on genetic variability, heritability and character association in dolichos bean (*Lablab purpureus*)**

**Vijay Bahadur\*, Pavan Kumar and Devi Singh**

*Department of Horticulture, Allahabad School of Agriculture,*

*Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad (U.P.)-211007, India*

*\*E-mail: vijaybahadur2007@gmail.com*

**ABSTRACT:** The present studies on genetic variability, heritability and character association in Dolichos bean (*Lablab purpureus*) were carried out at vegetable research farm, Department of Horticulture, Allahabad School of Agriculture, SHIATS, Allahabad. The experiment having 20 genotypes was laid out in simple RBD with three replications. It was observed that PUSA SEM-3 genotype was found superior in terms of pod yield per plant (2.319 kg). The phenotypic coefficient of variation (PCV) was higher than GCV for all the traits. Heritability in broad sense was noticed high for all the traits except days to germination. Higher genetic advance was observed for plant height, and high genetic advance as per cent of mean was found in pod yield per plant. The traits like plant height, number of primary branches per plant, number of inflorescence per plant, number of flowers per inflorescence, number of pods per inflorescence, number of pods per plant, number of seeds per pod, pod length, pod width and pod weight showed positive significant correlation with pod yield per plant at both genotypic and phenotypic levels. Number of pods per plant exhibited the highest positive direct effect on yield at both genotypic and phenotypic path level.

**Published in : *HortFlora Research Spectrum*, Vol. 2(3) : 208-214 (2013)**

**6. Effect of plastic mulch on growth, yield and economics of watermelon [*Citrullus lanatus* (Thumb.) Matsum and Nakai] under Nimar plains conditions of Madhya Pradesh**

**S.K. Tyagi\* and M.L. Sharma**

*Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Krishi Vigyan Kendra, Khargone-451 001 (M.P.) India*

*\*E-mail: suniltyagikvk@yahoo.co.in*

**ABSTRACT:** In order to define the influence of mulching on growth and yield of watermelon, an experiment was laid out as *on-farm* trials entitled "Effect of plastic mulch on growth, yield and economics of watermelon [*Citrullus lanatus* (Thumb.) Matsum et Nakai] under Nimar plains conditions of Madhya Pradesh" at farmer's field in five locations at Khargone district of Madhya Pradesh during two consecutive spring growing season of 2011 and 2012. Watermelon was grown on silver-on-black plastic mulch and without mulch field. The main vine length, number of branches, number of fruits per plant, average fruit weight and yield per hectare were recorded. It was noticed that plastic mulch had significant response on vegetative growth, yield and net profit. Plants in plastic mulch treatment had higher yields ascribed due to higher length of vine, number of branches, number of fruits per plant and average fruit weight. The study revealed that silver-on-black plastic film could be conducive and beneficial in enhancing the yield which lead to 75.29% and 82.10% increase over farmers' practice during 2011 and 2012, respectively with a mean value of 78.70% increase over farmers practice and net profit of watermelon found suitable for an early spring sowing under the Nimar Zone conditions of Madhya Pradesh.

**Published in : *HortFlora Research Spectrum*, Vol. 2(3) : 215-219 (2013)**

## **7. Production and marketing of Marigold flowers in Uttar Pradesh with special reference to Kannauj district**

**Arun Kumar<sup>1</sup>, S.C. Verma<sup>2</sup>, Shilpi Chaurasia<sup>3</sup> and S.B. Saxena<sup>4</sup>**

<sup>1</sup>Major S.D. Singh Degree College, Mohammadabad, Farrukhabad (U.P.)

<sup>2</sup>Deptt. of Agril. Economics, B.R.D.P.G. College, Deoria (U.P.)

<sup>3</sup>P.P.N. (P.G.) College, Kanpur (U.P.)

<sup>4</sup>Deptt. of Economics, National Degree College, Bhogaon, Mainpuri (U.P.)

**ABSTRACT:** The study was undertaken during the season of 2009-10 to estimate the cost of cultivation of marigold flower and returns and marketing margins of different middleman involved in marigold flower trade in Kannauj district of Uttar Pradesh. The study was based on information collected from randomly 60 marigold flower growing farmers, commission agent cum wholesaler and retailers. The overall cost of cultivation of marigold flower was estimated as Rs. 7365 per hectare. The overall gross income and average net income from marigold crop was estimated to be Rs. 121792 and Rs. 48141 per hectare, respectively. The average return per rupee investment was estimated as Rs. 1.66, which shows that marigold cultivation was highly profitable in the selected area. Out of two marketing channels, Channel-I (producer-commission-retailer-consumer) was the important channel from producers point of view, where producers received more percentage share (35.68 per cent) in consumer's rupee than the channel-II (31.95 per cent). The total marketing cost was Rs. 6.90 and Rs. 8.63 per kilogram of marigold flower for channel-I and channel-II, respectively. The major item of marketing cost were the value of quantity loss and labour charges. In channel-I retailers earned a margin of 10.35 and 34.69 per cent of the price paid by the consumers.

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## **8. Vegetable type faba bean lines identified-suitable for Eastern region of India**

**Anil Kumar Singh\* and B.P. Bhatt**

ICAR Research Complex for Eastern Region, Patna-800 014 Bihar

\*E-mail: anil.icarpat@gmail.com

**ABSTRACT:** Faba bean, being a good source of cheap protein, can be consumed fresh green as vegetable and variety of dishes are prepared from dried cotyledon. There is only one vegetable type faba bean variety "Pusa Sumeet" which has been developed at all India level by IARI, New Delhi and same is used as check variety. Three lines suitable for vegetable purpose have been developed at ICAR Research Complex for Eastern Region Patna. Single plant selection method was applied for development of these vegetable type faba bean lines. Three promising lines viz., VFBP201302, VFBP201304 and VFBP201306 were identified for vegetable purposes with green pod yield potential of 21.51 to 23.54 t/ha, suitable for Eastern parts of India.

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## **9. Self help groups boost turmeric production in Meghalaya—A success story**

**N.A. Deshmukh<sup>1\*</sup>, R.K. Patel<sup>1</sup>, Bidyut C. Deka<sup>2</sup>, V.K. Verma<sup>1</sup>, A.K. Jha<sup>1</sup> and J.E. Pathaw<sup>1</sup>**

<sup>1</sup>Division of Horticulture, ICAR Research Complex for NEH Region, Umiam-793103, Meghalaya

<sup>2</sup>ICAR Research Complex for NEH Region, Nagaland Centre, Jharnapani, Nagaland.

\*E-mail: nadeshmukh1981@gmail.com

**ABSTRACT:** Front line demonstrations (FLD) on high yielding turmeric cv. Megha Turmeric-1 were conducted at Ri-Bhoi district of Meghalaya under farmer's participatory mode during year 2011-12. A total of eleven SHGs from nine villages involving 122 farmers were participated in demonstration covering the total area about 7.5 ha area. From the FLD, 1152.29 q of fresh turmeric was produced from a 7.5 ha area with productivity of 156.31 q/ha. The attractive gross return (Rs. 234460 Rs/ha) and net returns (Rs. 141604/ha) with higher B:C ratio (2.52) were recorded by the SHGs with adoption of scientific management practices. Production of turmeric through farmer's participatory mode with technological intervention (Megha Turmeric-1) not only increased the production of turmeric but also generated employment and developed entrepreneurship among tribal farmers.

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**10. Explant surface sterilization technique for micropropagation of banana (*Musa sp.*) cv. Dwarf Cavendish**

**Vartika Srivastava\*, Anand Kumar Singh and S.P. Singh**

*Department of Horticulture, Institute of Agricultural Sciences, BHU, Varanasi 221005*

*\*E-mail: vartika0906@gmail.com*

**ABSTRACT:** An attempt was made to find out the most efficient and successful surface sterilization technique for banana micropropagation. Young healthy suckers of *Musa* cultivar Dwarf Cavendish were washed under tap water and trimmed to a block of 50 mm<sup>3</sup> containing shoot tip and rhizomatous base. Field suckers were processed within two hours of uprooting by chopping down the rhizome and pseudostem parts, soaking the excised tissue block in 0.1% bavistin (broad spectrum fungicide) + 0.05% streptocycline for 30 min at 150 rpm in a rotary shaker followed by rinsing in double distilled water. After further trimming to 3–4 cm, tissue were treated with 1% Cetrimide for 30 min., external sheaths were removed and finally treated with NaOCl (4%) or HgCl<sub>2</sub> (0.1%) for varying time period in a laminar hood. The best aseptic cultures as well as survival of explants were obtained with mercuric chloride (0.1%) for 5 minutes followed by quick dip in ethanol.

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**11. Effect of biocides and sucrose on vase life and quality of cut gerbera (*Gerbera jamesonii*) cv. Maron Dementine**

**Prathamesh Vaidya<sup>1\*</sup> and John P. Collis**

*Department of Horticulture, SHIATS, Allahabad-211 007 (U.P.)*

<sup>1</sup>*Present address: Department of Horticulture, Dr. PDKV, Akola (M.S.)*

*\*E-mail: Pratham1828746@gmail.com*

**ABSTRACT:** An experiment was carried out in the Department of Horticulture laboratory, SHIATS, Allahabad. The experiment was conducted in completely randomized design (CRD) with nine treatments replicated thrice. There were nine treatments of different concentrations of sucrose (3% and 4%), silver nitrate (20 ppm and 40 ppm), Aluminium sulphate (200 ppm and 400ppm) and 8- Hydroxy quinoline citrate (200ppm and 400 ppm) in combination and one control. It was observed that treatment T<sub>4</sub> (Sucrose 4% + AgNO<sub>3</sub> 400 ppm) and T<sub>8</sub> (Sucrose 4% + 8-HQC 400ppm) gave better results and T<sub>8</sub> (Sucrose 4% + 8-HQC 400 ppm) had least cost of maintenance. Therefore T<sub>4</sub> and T<sub>8</sub> may be recommended as commercial use for enhancing the vase life and quality of cut Gerbera cv. Maron Dementine.

**Published in : *HortFlora Research Spectrum*, Vol. 2(3) : 239-243 (2013)**

**12. Evaluation of gerbera (*Gerbera jamesonii* Bolus ex. Hooker f.) genotypes for vegetative and flower quality under polyhouse**

**Rajiv Kumar<sup>1\*</sup> and D.S. Yadav**

*Division of Horticulture, ICAR Research Complex for NEH Region, Umiam 793103, Meghalaya*

<sup>1</sup>*Present address: Division of Ornamental Crops, Indian Institute of Horticultural Research, Hessaraghatta Lake Post, Bangalore 560 089,*

*\*E-mail: flori\_rajiv@yahoo.co.in*

**ABSTRACT:** The present investigation was carried out to evaluate the performance of seven genotypes under polyhouse conditions in sub-tropical mid hills of Meghalaya. Significant differences were observed for all the characters. The results revealed that genotype Monarch recorded maximum leaf length (38.75 cm), number of leaves/plant (23.22) and delayed bud burst (123.00 days) and first flower opening (130.00 days). Maximum stalk length (62.85 cm) and disc diameter (2.97 cm) was recorded in genotype Piton. Genotype Sangria recorded maximum leaf breadth (11.25 cm), number of suckers/plant (4.13) and number of ray florets/flower head (69.65 cm). Maximum plant spread (46.51 cm), stalk diameter (0.83 cm), flower diameter (12.98 cm) and vase life (11.65 days) was recorded in genotype Pink Elegance. However, genotype Sazou recorded maximum number of flowers/plant (37.65 cm) followed by Piton (37.25) and Sangria (36.62). On the basis of overall performance, genotypes Pink Elegance, Piton and Sangria were found promising for cut flower production under polyhouse in Meghalaya conditions.

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**13. Effect of various post harvest treatments on percentage of shrinkage and spoilage of tomato (*Lycopersicon esculentum* Mill)**

**Bibhuti Bhusan Sahoo<sup>1\*</sup>, Bhaskar Chandra Das<sup>2</sup>, Purandar Mandal<sup>3</sup> and Dheerendra Katiyar<sup>4</sup>**

<sup>1</sup>Department of Crop Improvement, Horticulture & Agricultural Botany (CIHAB), PSB (Institute of Agriculture), Visva-Bharati, Sriniketan, (WB)

<sup>2</sup>Department of Post Harvest Management, College of Horticulture, OUAT, Chiplima, Sambalpur (Odisha).

<sup>3</sup>College of Horticulture, OUAT, Chiplima, Sambalpur (Odisha)

<sup>4</sup>Deptt. of Vegetable Science, CSAUA &T, Kanpur (UP).

\*E-mail: bibhutihort@rediffmail.com

**ABSTRACT:** The experiment was conducted in the laboratory of the Department of CIHAB, PSB (Institute of Agriculture), Visva-Bharati, Sriniketan (WB). The experiment was laid out in RBD with nine treatments each comprising of three replications and ten fruits per replication. The results indicated that ripening was initially delayed by MAP, NAA and NAA+MAP treatments. Fruits treated with NAA+MAP, NAA+PMAP and GA<sub>3</sub>+MAP showed minimum percentage of shrinkage up to 16<sup>th</sup> day of storage. The shrinkage was significantly delayed by MAP and PMAP treatments at the beginning. Relatively less percentage of rotting was noted in PMAP and in combination of PMAP and GA<sub>3</sub> treatments. It is evident from the results that the fruits under NAA, GA<sub>3</sub> and PMAP exhibited promising results in extending the storage life of tomato at room temperature up to two weeks.

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**14. Efficacy of novel insecticides against shoot and fruit borer (*Earias vittella* Fabr.) in okra crop**

**Ram Singh Umrao<sup>1\*</sup>, Siddarth Singh<sup>1</sup>, Jitendra Kumar<sup>2</sup>, D.R. Singh<sup>1</sup> and D.K. Singh<sup>3</sup>**

<sup>1</sup>Department of Entomology; <sup>2</sup>EBR ; <sup>3</sup>Oil seed section

C.S. Azad University of Agriculture & Technology, Kanpur-208 002

**ABSTRACT:** Seven novel insecticides (imidacloprid, fipronil, indoxacarb, endosulfan, malathion, Roket and neemarin) with an untreated control were tested for minimizing *Earias vittella* infestation in okra crop. Three sprayings, first at 30 days after sowing and second and third subsequent sprayings at 15 days interval were done. Data were recorded on 10<sup>th</sup> day after each spraying. All the treatments were found effective in minimizing fruit infestation over control and indoxacarb was proved to be the best one among all the treatments. After 10<sup>th</sup> day of first, second and third spraying, infestation was 14.47, 2.68 and 5.68 per cent, respectively. While neemarin was lesser effective having higher fruit infestation of 47.38, 30.53 and 33.52 per cent, respectively over control after 10<sup>th</sup> day of first, second and third spraying. The yield of okra fruits showed that indoxacarb recorded the highest fresh fruit yield i.e. 7.00 kg per plot (58.33 q/ha) with 42.86 per cent increased yield as compared to control. While neemarin recorded minimum fresh fruit yield i.e. 5.27 kg per plot (43.89 q/ha) with 24.05 per cent increased fruit yield as compared with control.

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**15. Effect of planting density on earliness and fruit and seed yield of muskmelon**

**Deepak Arora<sup>\*</sup>, P.S. Brar, Rajinder Singh and V.K. Vashisht**

Department of Vegetable Science, Punjab Agricultural University, Ludhiana

\*E-mail: deepak\_veg@rediffmail.com

**ABSTRACT:** The effects of varying planting densities on earliness and fruit and seed yield in muskmelon were investigated during 2012 and 2013 at University Seed Farm, Ladhowal of PAU, Ludhiana. The results indicated that the wider plant spacing of 1.1 plants per linear furrow meter not only produced early harvest but the vines were also healthy and longer than the others. There was significant increase in total yield with higher planting density of 3.3 and 2.2 plants per linear furrow meter over recommended planting density of 1.7. But there was decrease in the marketable yield at the higher plant population of 3.3 and 2.2 plants per linear furrow meter. The higher planting density of 3.3 plants per linear furrow meter had maximum number of fruits per unit area and also produced the boldest seed among all the treatments and thus had high seed yield index. Therefore, if the ultimate aim is getting the maximum seed yield from muskmelon, the planting density of 3.3 proved to be the best.

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**16. Studies on processing and storage stability of aonla (*Emblica officinalis* Gaertn) nectar**  
**Purandar Mandal<sup>1</sup>, Bibhuti Bhusan Sahoo<sup>1\*</sup>, Bhaskar Chandra Das<sup>2</sup> and Dhirendra Katiyar<sup>3</sup>**

<sup>1</sup>College of Horticulture, OUAT, Chiplima, Sambalpur-768 025, India

<sup>1</sup>AICRP on Onion and Garlic, College of Horticulture, OUAT, Chiplima

<sup>2</sup>Department of Post Harvest Management, College of Horticulture, OUAT, Chiplima, Sambalpur (Odisha)

<sup>3</sup>Dept. of Vegetable Science, CSAUA &T, Kanpur(UP).

\*E-mail: bibhutihort@rediffmail.com

**ABSTRACT:** In the study different recipes of Aonla Nectar was standardized to explore the processing potential of Aonla. There were five different possibilities of recipes. The Nectar prepared from the recipes with 20% pulp, 13% TSS and 0.30% acidity gave highest organoleptic quality score followed by Nectar prepared from 20% pulp, 16% TSS and 0.25% acidity and the consumer acceptability of the ideal Nectar was maintained up to fifth month at ambient temperature.

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**17. Effect of bio-fertilizers on yield and economic traits of potato at two fertility levels**

**U.N.Singh\***

L B S Krishi Vigyan Kendra, Gopalgram, Gonda (U.P.) \*E-mail: unsingh7777@gmail.com

**ABSTRACT:** A field experiment was conducted for two consecutive years to assess the efficiency of bio-fertilizers at two fertility levels on yield and economy of potato crop. Results revealed that application 100% recommended dose of nitrogen and phosphorus + *Azotobacter* and *Phosphobacteria* gave the maximum tuber yield which was closely followed by application of 75% recommended dose of nitrogen and phosphorus + *Azotobacter* and *Phosphobacteria*. However, both the treatments gave considerable net return indicating 25% saving of nitrogen and phosphorus fertilizers. Among both the inoculants *Bacillus cereus* was found better than *Bacillus subtilis* in potato yield.

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**18. Effect of post harvest application of calcium chloride on storage life of mango var. Dushehari fruits**

**B.S. Dhillon<sup>1</sup> and Sukhjot Kaur\***

Punjab Agricultural University, Regional Research Station, Gurdaspur (Punjab)-143 521

<sup>1</sup>KVK, Amritsar

\*E-mail: sukhi.rose@gmail.com

**ABSTRACT:** An experiment was conducted to assess the effect of post-harvest application of Calcium Chloride on the storage life of mango (*Mangifera indica* L.) var. Dushehari fruits. The fully mature mango fruits were harvested and treated with different concentrations of CaCl<sub>2</sub> viz. 0%, 2%, 4%, 6% and 8% and stored for different days viz. 3, 6, 9, and 12 days at room temperature. The results showed that post-harvest application of Calcium Chloride(6%) had proved quite effective in enhancing the shelf life of Dushehari mango fruits up to 12 days at room temperature.

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**19. Effect of IBA concentrations on growth and rooting of *Citrus limon* cv. Pant Lemon cuttings**

**K.K. Singh\*, T. Choudhary and Prabhat Kumar**

Department of Horticulture, Chauras Campus, HNB Garhwal Central University, Srinagar (Garhwal) 246174, Uttarakhand, India

\*E-mail: forekrishna@gmail.com

**ABSTRACT:** An investigation was undertaken to study the effect of different concentrations of IBA on growth and rooting of *Citrus limon* cuttings under Garhwal region. The hardwood cuttings of *Citrus limon* cv. Pant Lemon were collected from healthy vigorous shoots of 3-5 year old plants. The cuttings were planted in one kg capacity polythene bags containing soil, sand and FYM mixture in 1:1:1 (v/v) ratio. The stem cuttings of *Citrus limon* were treated with IBA solutions of different concentrations i.e. 1000, 1500, 2000 ppm and control (tap water only) by quick dip method. The experiment was replicated thrice with 10 cuttings in each treatment. Among all the treatments, the number of sprouted cuttings (6.29), length and diameter of sprout (23.77cm and 1.52 cm, respectively), number of sprouts, number of leaves and number of roots/cutting (17.77 and 23.00 and 52.42, respectively), and average maximum length and diameter of roots (26.33 cm and 1.33 cm, respectively) were noticed maximum in treatment with 2000 ppm concentration of IBA.

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## **20. Regeneration of Kagzi lime (*Citrus aurantifolia* Swingle) through stem cuttings with the aid of IBA and PHB**

**Diwaker\* and P.N. Katiyar**

*Department of Horticulture, C.S. Azad University of Agriculture and Technology, Kanpur, U.P., India.*

*\*E-mail: annu6381@gmail.com*

**ABSTRACT :** Maximum percentage of cuttings sprouted (24.33%) and maximum number of roots per cutting (7.67) were recorded with treatment IBA 2000 ppm+PHB 1000 ppm. The treatment with PHB 1000 ppm recorded minimum percentage of sprouting (8.83 %). Maximum number of sprouts per cutting (7.67) was observed with T<sub>7</sub> and its minimum number (2.67) was noted under control. The length and diameter of primary root (9.33 cm and 2.80 mm) were also noted maximum under 2000 ppm IBA + 1000 PHB. The diameter of sprout (3.53 mm) and the size of leaves in terms of their length and width (5.67 cm, and 3.83 cm, respectively) was maximum with IBA 1500 ppm + PHB 1000 ppm. The maximum dry matter accumulation in the roots (132.33 mg) was with IBA 2000 ppm whereas, the cutting treated with IBA 2000 ppm + PHB 1000 ppm expressed the highest survival (77.00%) of rooted cuttings.

**Published in : *HortFlora Research Spectrum*, Vol. 2(3) : 271-273 (2013)**

## **21. Heritability and genetic advance in cabbage (*Brassica oleracea* var. *capitata* L.) under Lucknow condition**

**Shweta Soni\*, Sanjay Kumar, Sutanu Maji and Awadhesh Kumar**

*Department of Applied Plant Science (Horticulture)*

*BabasahebBhimraoAmbedkar University, Vidya-Vihar, Rae Bareilly Road, Lucknow*

*\*E-mail: supriyasoni.soni05@gmail.com*

**ABSTRACT:** The present study aimed at evaluation of heritability and genetic advance in sixteen genotypes of cabbage under Lucknow condition. Findings revealed that high heritability in broad sense were observed for vitamin C (99.50%), days to maturity (98.90%), core length (88.20%), head weight (87.30%), yield (87.20%), leaf width (83.40%) and leaf length (83.20%) whereas, moderate for plant height (78.20%), equitorial length (72.70%), head polar diameter (71.60%), stalk length (71.20%), plant spread (69.80%) and number of non-wrapper leaves (66.00%). Genetic advance as percentage of mean varied from 6.04 %-50.09% for plant spread and vitamin C content, respectively.

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